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CONSULTING ENGINEERS  
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**ELECTRONICALLY FILED**

June 16, 2000

Ms. Magalie Roman Salas  
Office of the Secretary  
Federal Communications Commission  
445 12th Street, S.W., Room TW-B 204  
Washington, D.C. 20554

Dear Ms. Salas:

On behalf of Hammett & Edison, Inc., Consulting Engineers, we are filing electronically our reply comments to MM Docket 00-39, concerning a Review of FCC Rules and Policies Affecting the Conversion to Digital Television.

Sincerely,

/s/ Dane E. Ericksen

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Enclosure

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**MM Docket 00-39  
Review of DTV  
Rules and Policies**

**Reply Comments of  
Hammett & Edison, Inc.  
Consulting Engineers**

June 16, 2000

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**HAMMETT & EDISON, INC.**  
CONSULTING ENGINEERS  
SAN FRANCISCO

**Before the  
FEDERAL COMMUNICATIONS COMMISSION  
Washington, D.C. 20554**

|                                  |   |                     |
|----------------------------------|---|---------------------|
| In the Matter of                 | ) |                     |
|                                  | ) |                     |
| Review of the Commission's       | ) | MM Docket No. 00-39 |
| Rules and Policies Affecting the | ) |                     |
| Conversion to Digital Television | ) |                     |
|                                  | ) |                     |

To: The Commission

**Reply Comments of Hammett & Edison, Inc.**

The firm of Hammett & Edison, Inc., Consulting Engineers, respectfully submits these reply comments in the above-captioned proceeding relating to the Commission's Review of DTV rules and policies. Hammett & Edison, Inc. is a professional service organization that provides consultation to commercial and governmental clients on communications, radio, television, and related engineering matters.

**I. Flaws in the Commission's OET-69 Methodology Must Be Fixed**

1. The Joint Broadcasters, consisting of NAB, ALTV, APTS, Chris-Craft, NBC, PBS, Tribune, and Disney, urge the Commission to establish a cut-off date, and to adopt a methodology to deal with mutually-exclusive ("MX") DTV and NTSC applications. Hammett & Edison applauds such an approach. However, it seems silly to base such MX calculus on 0.5% and 2.0% "*de minimus*" criteria when there is an average uncertainty of 18% due to the Commission's treatment of cells returning Error Code 3 ("EC3").
2. The Commission's decision to give "free parking" to EC3 cells, that is, a) to assume the desired signal is above its DTV threshold and b) to not check for interference from other stations, appears to be based on the presumption that relatively few cells have the EC3 problem. As was documented in the H&E August 26, 1999, filing to MM Docket 87-268, and as was again documented in the May 17, 2000, H&E filing to MM Docket 00-39, this has turned out to be a flawed assumption. The solution is for the Commission to recognize its error, and to quit providing "free parking" to EC3 cells; that is, to ignore the EC3 warnings, which appear largely to be "false alarm" error messages. Of course, in fairness to parties with pending applications, and to existing licensees and permittees (both DTV and NTSC, including TV translators, LPTVs, and Class A TVs), the requirement to show protection for



all cells, regardless of EC3, should only be imposed on applications submitted more than 30 days after the R&O to MM Docket 00-39 has been published in the Federal Register.

3. Similarly, the Commission must fix the depression angle error. Unlike the EC3 issue, which was based on engineering judgment that may have seemed reasonable at the time, but that almost three years of experience with OET-69 style interference studies have shown to unfortunately not to have been a good decision, the depression angle error is due purely to an error in the Commission's OET-69 source coding, and was unintentional. We are quite surprised that the Commission did not simply fix this problem in December of 1998, when it was discovered by us and pointed out to Commission staff; a Public Notice, advising all parties of the error, would have sufficed, treating the depression angle problem, where the FCC software incorrectly calculates the depression angle to cells based on the transmitting antenna's height AGL rather than its height AMSL, as an erratum. The lack of such an entirely reasonable and forthright fix to what is so clearly an unintentional error means that broadcasters have had to continue to base their OET-69 interference studies on an algorithm known to be erroneous, so as to match the FCC software. This is silly. This is indefensible. The Commission should use this instant rule making to fix the depression angle calculation error.

## **II. The Assumption of Different Receiving Antenna Performance for NTSC and DTV Reception is Illogical and Should Be Corrected**

4. As was pointed out in our initial comments, examination of the source code used by the Commission to develop the DTV Table of Allotments, and for the processing of applications, assumed the use of DTV receiving antennas with 4 dB better performance than their NTSC counterpart for VHF low band stations, 6 dB better than their NTSC counterpart for VHF high band stations, and 8 dB better than their NTSC counterpart for UHF stations.<sup>1</sup> This engineering "sleight of hand" was only discovered by our detailed analysis of the Commission's source code; it was not disclosed nor discussed in OET-69 or the various Docket 87-268 rule makings.

5. We submit that it is illogical to assume significantly better performance for consumer receiving antennas for the reception of a DTV signal versus an NTSC signal; common sense dictates that viewers will use the very same receiving antenna for both NTSC reception and DTV reception. Thus, the Commission needs to use the same receiving antenna patterns for

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<sup>1</sup> As documented by Figures 10A, 10B, and 10C to the August 26, 1999, H&E Docket 87-268 comments, and again as documented by Figures 10A, 10B, and 10C to the H&E Docket 00-39 comments.



both NTSC and DTV interference calculations. We recommend using the lesser NTSC receiving antenna performance, as we believe this is the most likely consumer practice. Of course, out of fairness, all existing applications and grants would need to be “grandfathered” in under the present, wishful thinking, dual receiving antenna scheme, but at least future designs would be based on technically sound principals.

### **III. Use of Cell Geographic Centers**

6. AFCCE proposes to use the geographic centers of cells rather than a centroid based on the distribution of population within the cell. AFCCE points out that when the population database changes, as it will when the Census for 2000 is released, the population centroid, the path profile, and the coverage area results will all change if a cell centroid based on population distribution within the cell continues to be used. AFCCE notes that the population database can be separated from the signal level calculation by using the geometric center of each cell in all cases; such separation of the signal level computation from the population computation will result in a constant coverage area for a given facility, even as the population count changes with time. We concur with the AFCCE proposal, and urge the Commission to adopt it.



#### IV. Summary

7. We have documented several engineering problems uncovered by our work on DTV applications and by the necessity to dissect the Commission's OET-69 software to ensure that we can replicate the results obtained by the Commission. In doing so, we have discovered several items either that were not addressed in the Docket 87-268 proceeding or, if addressed, that subsequent experience has now revealed need fixing. We urge that the Commission address and resolve these issues head-on, and not continue simply to ignore them.

Respectfully submitted,

/s/ William F. Hammett, P.E.  
President

/s/ Dane E. Ericksen, P.E.  
Senior Engineer

June 16, 2000

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